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**THE INFLUENCE OF ATTITUDES, BELIEFS, AND
SOCIAL FACTORS ON CAREGIVERS' DECISIONS
ON THE USE OF OTC MEDICATIONS
IN PRESCHOOL CHILDREN**

BY

CONNIE R. ECKLUND, CAPT, USAF, NC

**A thesis submitted in partial fulfillment
of the requirements for the degree of**

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ABSTRACT

THE INFLUENCE OF ATTITUDES, BELIEFS, AND SOCIAL FACTORS ON CAREGIVERS' DECISIONS ON THE USE OF OTC MEDICATIONS IN PRESCHOOL CHILDREN

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1998

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The purpose of this descriptive correlational study was to determine the extent that social factors, health beliefs, and attitudes influenced caregiver's decisions in home management with over-the-counter (OTC) medications. Home management decisions were studied in relation to seeking professional care. The association of parents' decisions concerning OTC medications with social factors, as well as beliefs and attitudes related to illness, susceptibility and severity, and medication effectiveness was

examined. A theoretical framework based on the Health Belief Model (Rosenstock, 1974) guided the conceptualization of this study. A convenience sample of caregivers with an index child of 3 - 5 years of age was recruited through county-based Head Start programs. Approximately 50 caregivers completed the study instrument at monthly parent counsel meetings. Data were analyzed using Pearson product-moment correlational coefficient. Significant correlations were noted between the age of the caregiver, perception of severity of the child's illness, and perception of the child's susceptibility to illness and calling the doctor for advice or intervention. There were also significant correlations between both the economic status of the household and the perceived effect of OTC medications with caregiver's report of when they would give OTC medications. No significant relationships were found between trust in doctors, barriers to seeking care, and gender of the child and either the choice of giving OTC medication or calling the doctor. It has been estimated that more than 50% of all 3 year olds have been given some type of OTC medication (Kogan, et al., 1994). Findings from this study suggest clinical counseling directions for nurses working in primary care settings.

CHAPTER 1

INTRODUCTION AND THEORETICAL FRAMEWORK

The use of over-the-counter (OTC) medication is an essential part of health care in the United States. Kogan, Pappas, Yu, and Kotelchuck (1994) reported that nearly \$2 billion per year is spent on cold remedies alone, and an estimated 70% of illnesses are treated with OTC medications. The use of OTC medications for children is a particularly important topic as early research found that OTC medications may be used in lieu of obtaining medical care (Maiman, Becker, Cummings, Drachman, & O'Connor, 1982). Kogan et al. (1994) reported that in a 30 day period 53.7% of all 3 year old children were given some type of OTC medications. To date, few investigators have pursued studies of OTC medications except for those who have explored the caregiver's attitude and beliefs regarding the use of these medications in children. The purpose of this study is to describe how caregivers perception of severity, susceptibility, trust in doctors, perceived barriers to seeking care, and perceived effectiveness of OTC medication affect their decisions for care of the preschool child's health, and how social factors impact their decision to medicate their child with OTC cough and cold medications and/or call the doctor.

The theoretical framework used to examine these purposes is the Health-Belief Model as it applies to mothers' medication behavior with their preschool-age children. The framework was selected for this study because the

basic behavioral assumptions within this framework include: 1) individuals place a value on a goal, and 2) an estimate of the likelihood that the individual will engage in an action to achieve that goal (Janz & Becker, 1984). In this study, the degree of concern the caregiver has for the child's illness and what prompts the caregiver to seek OTC medication or professional help align with the assumptions.

Factors affecting the mother's or caretaker's decision to medicate a child can include attitudes and beliefs regarding children's health, sociodemographic characteristics, and effectiveness of medications (Maiman, Becker, & Katlic, 1986). Children's health was defined as perceived vulnerability to illness and frequency of health problems. Kogan et al. (1994) and Maiman et al. (1986) found that the use of OTC medication in children is directly related to the educational level and socioeconomic status (SES) of the mother; the higher the SES and educational level of the mother the more OTC medications the children were likely to receive. When types of medications received by the children were studied, it was found that Tylenol was given 66.7% of the time, cough and cold medications (CCM) 66.7%, and other pain relievers 6.9%. The reported percentages are greater than 100% because many children received two or more OTC medications in the 30 day period (Kogan et al., 1994).

Clearly, OTC medications are an important element in the health care of today's preschool children. Kogan et al. (1994) found a high usage of OTC medication even though a lack of scientific proof exists regarding effectiveness and risk is associated with improper use. Smith and Feldman (1993) found only two published clinical trials addressing the efficacy of OTC cough and cold medications in preschool-age children. The studies found no beneficial

effects from the medications. Furthermore, Smith and Feldman pointed out “that OTC cold medications are a frequent cause of unintentional ingestion in preschool-age children” (p. 2262). The caregiver’s behavior and beliefs coupled with little education about medication use put children at risk for misuse of OTC cough and cold medications.

Advance practice nurses are in key positions to educate parents about the risks and benefits of OTC cough and cold medications. Many factors play a role in decision-making for parents. Studying how social factors, sociodemographic status, and attitudes and beliefs about health and vulnerability can influence parents may assist practitioners to ensure safe medical recommendations for the preschool-age child. The decision to medicate a young child who has a cough or cold with OTC medications is critical. Advance practice nurses need to understand the decision-making process of parents when medicating children. This will aid the advance practice nurse in educating parents in issues such as the efficacy of the medication, safety regarding the dosage, side effects, and attractiveness of the medication. Preventing misuse begins through understanding current use, parental education about the OTC cough and cold medication in use, prescribing influences of the pediatric medical community, and how valuable parents feel medication is for their preschool-age child.

Health Belief Model

Rosenstock (1974) proposed the health-belief model to study an individual’s willingness to take recommended health action as dependent on their perception of four concepts. The concepts included perceived level of

susceptibility to a particular condition, perceived degree of severity of the consequences resulting from contracting the condition, potential benefits or efficacy in reducing susceptibility and/or severity, and psychological and other costs or barriers related to the intended action. Davidhizer (1983) stated, "The health-belief model relates psychological theories of decision making (which attempt to explain action in a choice situation) to an individual's decision about alternative health behavior" (p. 468). Although susceptibility, severity, benefits or efficacy, and barriers were the original concepts, a cue-to-action or stimulus is also needed (Davidhizer, 1983).

Susceptibility and severity. Perceived susceptibility is defined as "the subjective risks of contracting a condition" (Rosenstock, 1974a, p.3), in other words, how likely it is a person will contract illness. Perceived severity refers to "the consequences which may result from contracting the illness" (Davidhizer, 1983, p. 469). This perception may vary from person to person and is based on the emotional arousal illness raises for that person and the perceived difficulties an illness can create. According to Rosenstock, susceptibility and severity have a significant cognitive component and are partly dependent on knowledge.

Mothers' views on susceptibility and severity of the illness' their young children contract influence their medicating behaviors. A strong emotional element is involved both in with dealing with a child and in the perception of the illness. This is a subjective feeling of risk. Davidhizer (1983) describes this a behavior is that of the subjective world of the perceiver rather than the objective circumstances. People will act on what they believe to exist.

Modifying factors and “cues to action.” Modifying factors in the model include “demographic variables (age, sex, race, ethnicity, etc.), sociopsychological variables (personality, social class, peer and reference group pressure, etc.) and structural variables (knowledge about the disease, prior contact with the disease, etc.)” (Davidhizer, 1983, p, 468). These modifying factors can affect the perception of susceptibility and severity based on beliefs about certain illnesses. Together with the perception of susceptibility, severity, and “cues to action” these factors establish the perceived threat to the individual or in the case of this study, caregiver’s perception of illness in relation to their children. “Cues to action” can range from media exposure, advice from others, reminders from health professionals, illness in the family, to printed articles (Rosenstock, 1974a).

A mother’s belief about the health and illness of her children impacts her health related practices. Her perception of the child’s susceptibility influences whether she might treat with medications immediately or observe the progression of the illness. The decision to seek advice of health professionals or at what point to involve them is hypothesized to be directed by her evaluation of the severity of the illness.

Likelihood of action - benefits and barriers. The final component of the model takes into account the other components described thus far and estimates the likelihood of action. This decision is determined by the mother’s weighing the perceived benefits of the action against the perceived barriers to the action. Evaluating the potential benefits of efficacy of taking a health action includes whether or not the action will prevent or reduce the susceptibility and severity of the illness (Davidhizer, 1983). In this case the mother may consider several

courses of action before deciding which one is the most effective for the child. In considering the benefits, she may believe OTC medications are effective and safe or that health professional provide sound guidance and effective prescription medications for the ill child. Then she addresses the barriers to the health action which can include cost, availability, convenience, pain involved, or fear. Modifying factors can influence how a mother views the benefits as well as the barriers (Davidhizer, 1983). After the mother considers all aspects of the benefits versus barriers, she chooses a course of action.

In summary, the Health-Belief Model provides an ideal framework for attempting to understand how caregivers decide to care for the ill preschool child. Advance practice nurses must integrate knowledge about the caregiver decision-making process in order to provide accurate anticipatory guidance. A primary step in assisting the family in making wise choices is to understand what drives the decision to use OTC medications. The current research available is limited in discerning how caregivers make these decisions. The purpose of this study was to describe how caregivers perception of severity, susceptibility, trust in doctors, perceived barriers to seeking care, and perceived effectiveness of OTC medication affect their decisions for care of the preschool child's health, and how social factors impact their decision to medicate their child with OTC cough and cold medications and/or call the doctor. The findings of this study provide a greater understanding for advance practice nurses in what decision-making process' caregivers use when their children are ill.

CHAPTER 2

REVIEW OF THE LITERATURE

The review of the literature is divided into three main sections: (a) SES and sociodemographic status of caregivers' in relationship to OTC medication administration behaviors for young children (b) caregiver's attitudes and beliefs regarding health and vulnerability of children (c) safety and effectiveness of OTC cough and cold medications.

Social Factors

Several researchers have studied a family's SES and sociodemographic factors and their relationship to OTC medication administration behaviors of mothers for their young children. Maiman, Becker, Cummings, Drachman, and O'Connor (1982) explored sociodemographic characteristics, relating them to mothers' perceptions of their children's health. Findings from a stratified sample of 300 mothers presenting their children for well-child checks in three different sites were compared. One site was classified as low SES, the second as middle SES, and the third as high SES.

Researchers found that mother-initiated medication behavior was related to mothers' perception of their child's susceptibility to health threats. Also suggested was mothers who kept more medications on hand viewed their family as troubled more often with illnesses. The findings showed that mothers' with lower SES were more likely to keep medications for diarrhea, constipation, and weight reduction on hand than mothers' with a higher SES.

Mothers' with higher educational level and higher SES kept medications for children such as antacids, vitamins, antibiotic ointments, remedies for pain, allergies and skin conditions. These mothers tended to trust their ability to decide what course of therapy their child needed. They trusted their own opinions before the physician's. Findings also suggest, high medication possessing mothers were less careful when administering medications to their children. Finally, associated with a lower income and education was a skeptical attitude toward physicians.

In a later study, Maiman, Becker, and Katlic (1986) measured SES and sociodemographic influences of a stratified randomized sample of 500 mothers from two sample sites. The first site was a pediatric ambulatory care clinic at a teaching hospital and the second site was a large private pediatric group practice. Results of this study concluded the higher SES of the mother the greater number of OTC medications were possessed and used. Mother's who kept and used more OTC medications were significantly more likely to feel OTC medications were beneficial in the treatment of their children. Frequency of health problems were significantly related to medication possession and usage. A higher level of education and income was significantly related the amount of OTC medication possessed. Maiman et al. (1982) and Maiman et al. (1986) operationalized the Health Belief Model in the construction of their measurement tools. The two studies both concluded that a mother's SES and education level correlated with her medicating behaviors.

The findings of Kogan et al. (1994) supported Maiman et al. (1982) and Maiman et al. (1986) in that mothers with higher SES and education were more likely to give their children OTC medications while they were ill. The

investigators examined maternal characteristics related to the use of OTC medications in preschool-age children. They used a representative U.S. national sample from the 1991 longitudinal follow-up to the 1988 National Maternal and Infant Health Survey (NMIHS) conducted by the center of Health Statistics. Of the 8,145 mothers interviewed, more than half of them kept seven or more different categories of OTC medications available for their children.

The limiting factors of the three studies varied. Maiman et al. (1982) suggested that they did not measure the therapeutic outcomes of the medications in children and "...the effect of sociodemographic and attitudinal factors on the quality of mother-initiated medication treatments" (p. 148). They recommended that further research is needed for determining appropriate use and misuse in treatment initiated by mothers. In the 1986 study, Maiman et al. reported that they found no correlations between perceived health problems of children and specific medications used. As well as, whether SES variations occur with problem-specific evaluations. Such as evaluations that address specific health conditions like cough, colds, fever, or rash. The authors encouraged health care providers to take a more active role in educating parents in the use of OTC medication and in providing routine counseling for mothers regarding OTC medication use.

Kogan et al. (1994) suggested that data collected by mothers' self-report could lead to misclassification of medications. The study did not investigate the exact reasons for which the OTC medication was given but rather examined the events of medication usage and illness prevalence in the 30 days. They recommended more research regarding OTC medication use. In all three studies the authors suggested additional variables for correlation such as

therapeutic outcomes, classifications of medications, reasons for medication to be given, and misuse and appropriate use of OTC medications.

In summary, SES and sociodemographic factors have been found to have an impact on the medicating practices of mothers. With higher educational and income levels there is a greater likelihood of possessing and administering OTC medications. A lesser concern for giving OTC and a lack of interest regarding side effects were associated with lower SES and educational levels. Kogan et al. (1994) reported that more than half of their respondents possessed seven or more OTC medications. They found that type of insurance was not a factor but having no insurance may have been a reason for increased usage. They also related attitudes and beliefs to medicating practices.

Attitudes and Beliefs Regarding Severity and Susceptibility

Mothers' attitudes and beliefs about illness in their children has been explored by several researchers (Maiman et al. 1982, Maiman et al. 1986, and Hutton et al. 1991). In Maiman et al. (1986) mothers evaluated "perceived vulnerability" and "perceived efficacy of OTC medications" for different health problems. The findings were significantly correlated with the dependent variables, the strongest associations being how well mothers believed OTC medications worked for children. The authors found that mothers who "...keep and use more medications are significantly more likely to feel OTCs are beneficial in the treatment of their children's and their own illnesses" (p. 45). Maiman et al. (1986) also found that a mother's perception that her family is often troubled by illness rather than her own experience with illness, affects the

“frequency of health problem” indicator, significantly relating to OTC medication possession and use. The authors found that mothers who keep more medication on hand were more likely to consider OTC medication as sufficient in treating their child’s health problems. These mothers were found to be predisposed to begin using OTC medications for themselves and their children, and they tended to view the child as more vulnerable to health problems and the family more likely to be ill.

Maiman et al.’s (1982) study of sociodemographic and attitudinal factors found that perceived vulnerability and possession of medication were related to mothers’ medicating behavior and their perception of their child’s susceptibility to health problems. They found that keeping greater amounts on hand at home was strongly correlated with the mother’s “faith” in her ability to decide how to treat her child when he or she becomes ill. This finding supports the finding that mothers who possess more medication tend to trust their opinion about their child’s health before the opinion of the physician. Findings also supported that this type of mother had less concern for careful attention when administering OTC medications, and frequently added OTC medications to a course of therapy prescribed by a physician. An interesting finding from this study was that mothers with lower SES tended to consult pharmacists more often concerning the selection of OTC medication for their children.

Using an experimental design, Hutton et al. (1991) investigated parent’s beliefs regarding the need for treatment for an upper respiratory infection (URI), the effectiveness of an antihistamine-decongestant combination for relief of symptoms in children with a common cold, and the association of relief at 48 hours with whether the medication was desired by the parents and

received depending on the random assignment to groups. The sample included parents who reported that their children 6 months to 5 years old had symptoms of the common cold. The sample was recruited a pediatric walk-in clinic and a pediatric primary care clinic. The subjects were predominately Black, with low SES, and resided in a inner city. Subjects selected for the study were randomly assigned to a placebo, drug, or no medication group. Data were gathered by questionnaires and interviews followed by an examination of the child by a practitioner. Follow up phone interviews were accomplished at 48 hours after treatment.

The researchers found that the belief their children needed medicine for cold symptoms was held by nearly two thirds of the parents. Concerning the parents' perception of effectiveness of the medication, 64% of the study sample considered their child better at 48 hours according to parental report. Parents were asked about nine symptoms (congested or runny nose, breathing problems, fever, cough, decreased appetite, crankiness, sleep disturbance, excessive sleepiness, and vomiting) which were measured by a standardized change in severity for each symptom. There were no significant differences in categories of parental belief among scores for the three treatment groups. Parents who wanted medicine and received placebo treatment reported more improvement than drug. Parents who did not want medication, reported more improvement with drug placebo. A strong predictor of the degree to which symptoms changed was the initial parental assessment of the need for medication. More improvement was reported for the children whose parents requested medication compared to those whose parents did not. When parents were questioned regarding side effects of the drug or placebo, few side effects

were reported. One child in the placebo group was reported to have loose stools and one child in the drug group was reported to be hyperactive. One other child in the drug group was reported to be sleepier than usual but the parents felt this was a benefit. Seventeen subjects from each of the two groups (drug and placebo) reported benefits from the medication, most often improvement in nasal symptoms. Hutton et al. (1991) concluded, drugs for symptom improvement were no more effective than placebos. Receiving the drug was as no more effective than receiving no medication.

In Kogan et al. (1994), Maiman et al. (1982), and Maiman et al. (1986) the researchers measured insurance status and usual source of medical care. No difference was found in the use of OTC medications in children receiving either private health coverage or government funded care. However, the researchers commented that lack of health insurance tended to show a greater likelihood to use OTC medications perhaps as a substitute for formal health care. All three studies contained findings regarding the effects of race and either number of children in family or birth order of the index child. These variables tended to affect mothers' attitudes and beliefs concerning health and vulnerability.

In summary, findings from both Maiman et al.'s (1982) study and Maiman et al.'s (1986) study support the idea that perception of greater vulnerability is related to having more OTC medications on hand. Maiman et al. (1986) demonstrated that perception of susceptibility impacted the amount of OTC medications available in the home and the data supported the mother's belief in her ability to treat her child. Maiman et al. (1982) found mothers to be more likely to medicate if they had greater amounts of OTC medication on hand.

Hutton et al. (1991) reported no difference in drug and placebo groups, yet parents believed their children needed medication for the common cold. Among the three studies, the theoretical underpinnings involved the health belief model directly. Severity, susceptibility, and benefits were addressed.

Effectiveness of OTC Cough and Cold Medications

The belief in helping a child overcome symptoms to become well again motivates parents to use OTC cough and cold medications. Several researchers have explored the effectiveness, safety, dangers, and prescribing influences regarding OTC medication use in young children. Actual effectiveness vs. perceived effectiveness on the part of the parent varies considerably and safety becomes a major issue.

The problem of the effectiveness of OTC cough and cold medications in relieving cold symptoms in children was the focus of Smith and Feldman's (1993) critical review of clinical trials between 1950 and 1991. Inclusion criteria for the literature search indicated such topics as common cold, cough, therapeutic use, drug therapy, drug combinations, expectorants, anti-cholinergic agents, and OTC medications. Fifty-one papers were reviewed by one or the other of the authors. Of the 51 papers, only four studies had taken into account the pharmacological treatment of colds in children.

Authors of two of the studies explored the treatment of colds in preschool-age children (Sakchainanont et al., 1990 & Hutton, 1991). One found no benefit in using an antihistamine unless the child had copious amounts of nasal drainage (Sakchainanont et al., 1990). In the other study, Hutton et al. (1991)

found the use of an antihistamine-decongestant combination to result in no clinical improvement over 48 hours. Both studies used a treatment and a placebo group and Hutton et al. also used a no treatment group. Gadomski and Horton (1992), regarding the above studies, concluded that "...although cough and cold medications (CCM) may be effective in adults, no controlled trials in children younger than 5 years of age have been done that would permit a similar conclusion regarding the efficacy of CCMs in young children" (p. 775). Smith and Feldman (1993) reasoned that there are many potential problems associated with the use of OTC cough and cold medications in young children. They went on to point out to date, there was no evidence of effectiveness, and until "well-designed scientific studies" prove they are effective, OTC cough and cold medications should not be used.

Potential problems. The potential problems Smith and Feldman (1993) referred to are serious for this population. These problems include accidental/unintentional ingestions through unclear dosing guides on the labels, the appeal to children by color and taste, and the inability of the parents to recognize the adverse or negative side effects. Litovitz and Manoguerra (1992) co-authored a report based on data from the American Association of Poison Control Centers (AAPCC) on pediatric poisoning exposure incidents. They found, through a analysis of all reported exposures (toxic and nontoxic) over a 5 year period (1985-1989) that 670,000 reports involved OTC medications of either analgesic agents, cough/cold preparations, or gastrointestinal preparations in children under 6 years of age. Although serious morbidity for ingestions is low, frequently children require gastric lavage, charcoal, and several hours of emergency room observation (Smith & Feldman, 1993).

Smith and Feldman (1993) also determined that although side effects listed on the package may be mild, such as irritability or sleepiness, more serious side effects may occur such as visual hallucinations or psychosis. They pointed out the extensive cost of the medication (especially if there are many medications in the home) vs. the lack of evidence regarding effectiveness. Another factor to consider is that child-resistant closures do not mean the product is “child-proof” (Litovitz & Manoguerra, 1992). Many medications are attractive to children due to their colorful labeling, the color of the product, to its tastefulness (Smith & Feldman, 1993). This attractiveness may cause accidental exposures and overdoses. Gadomski and Horton (1992) pointed out that extensive advertising and marketing may have decreased the common understanding of the potential for CCM toxicity, if these products are not used as prescribed. The authors explained that irritability or fussiness may not seem a significant side effect superficially, but unexplained irritability in young infants may lead to invasive procedures such as lumbar puncture. Many times there isn’t a clear clinical picture of toxicity in the young infant or child.

Prescribing practices. Often OTC cough and cold medications are not prescribed by a health care provider but selected by the parent for the child. Sometimes the parent consults a health care provider and obtains a prescription for the medication. Gadomski and Rubin (1993), explored the reasons physicians prescribed these medications for young children. Their survey was sent to pediatricians on a mailing list of the Maryland Chapter of the American Academy of Pediatrics. The survey included demographic questions and presented a scenario involving a 12-month-old child with a URI. Respondents were asked to answer questions about how they would clinically manage the

problem. The authors found that frequency of reported recommendation for OTC cough and cold medication increased with the age of the child. Fifteen percent of the physicians said they would recommend cough and cold medication “usually” or “sometimes” for a child < 6 months old, but 61% indicated they would “usually” or “sometimes” recommend OTC cough and cold medication for children 13 - 24 months old. Finally, for children 36 months or older, 80% said they would recommend OTC cough and cold medication.

Many reasons were given by these physicians for recommending or prescribing these medications. The most common child-related reason was “difficulty sleeping” and “the most common parent-related reasons were that the parent was kept awake , or requested or insisted on a CCM” (p. 648). The authors concluded that “parental expectations, attitudes, and beliefs appear to influence pediatrician recommendations or prescriptions of CCMs for young children” (p. 649). Gadowski and Rubin suggested that SES and sociodemographic factors as well as perception of susceptibility to illness and beliefs regarding efficacy of OTC medications are important parental determinants of OTC cough and cold medication use in children. Parental pressure and expectations combined with the physicians’ “need to do something medical” increases the usage of these medications in the young population.

Review of these studies provides insight into the effectiveness or ineffectiveness of OTC cough and cold medication in young children. No study provided empirical evidence of the effectiveness of their use in the child under 5 years old. Several researchers also discussed the hazards and potential

problems related to the usage of these medications. These included accidental or unintentional ingestion, incorrect dosing, and inability to recognize side effects leading to unnecessary invasive procedures. Gadowski and Horton (1992) commented on the impact of advertising and marketing, and Smith and Feldman (1993) pointed out that the attractiveness of the packaging, color of the product, and taste may lead to accidental exposures. Gadowski and Rubin (1993) went on to explore physician prescribing practices for OTC cough and cold medication. Their results showed an inclination for physicians to prescribe OTC cough and cold medications as the child became older and that parental attitudes, beliefs, and pressure played a role in how often physicians prescribed or recommended these medications.

Summary

The theoretical framework for majority of the studies reviewed was the Health Belief Model. In exploring the dimension of susceptibility and severity, it was found that mothers with a heightened perception of their child being susceptible or perceiving a severe illness increased the use of OTC medications in their children (Maiman et al., 1982; Maiman et al., 1986). Results also revealed that if the child was perceived as more vulnerable by the mother the likelihood of the child's receiving OTC medication was greater. The amount of OTC medication kept "on hand" at home was strongly associated with the mother's "faith" in her ability to treat the child successfully. Maiman et al. (1982) found a strong association between perceived vulnerability and possession of OTC medications. Medicating behavior was related to the mother's perception of the child's susceptibility to health problems. Hutton et al. (1991) supported that the perception of susceptibility in many parents was

related to their belief that their children needed OTC medication for the common cold. Their results were interesting in that the parents self-reported that OTC medications worked even their child was given a placebo.

Another aspect of the Health Belief Model is modifying factors and “cue to action”, which provides a framework for SES and sociodemographic data. Maiman et al. (1982) and Maiman et al. (1986) reported that higher SES and educational levels showed increased possession and propensity to use OTC medication in children. Gadowski and Horton (1992) concluded that advertising and marketing had an impact on the lack of parental concern for side effects. Another modifying factor or “cue to action” was the physician’s recommendation for using the medications. Additional “cues to action” included the mother’s perception of severity of the illness as well as parental lack of sleep. Fatigue could precipitate the parent’s insistence for medications.

Finally, in relation to the benefits and barriers or likelihood of action, Kogan et al. (1994) established that insurance status (type of insurance utilized) had no bearing on the use of OTC medications in children. Smith and Feldman (1992) and Hutton et al. (1991) concluded that there was no evidence of efficacy of OTC cough and cold medications in children under 5 years of age. But, clearly parents in these studies believed that OTC medications are effective, and pediatricians were willing to prescribe or recommend OTC cough and cold medications if the child was older than one year (Gadowski & Rubin, 1993). Unproven efficacy, easy access, advertising, unclear and attractive labeling, palatable flavors, and lack of education about toxicity create the potential for misuse of OTC cough and cold medications in the preschool population.

Only a few studies have documented the effects of caregivers' attitudes and beliefs regarding the health of their children and their propensity to medicate with OTC medications. In two studies, (Maiman et al. 1982, & Maiman et al. 1986) conducted 10 years ago, the researchers concluded that health care providers and parents should be concerned about the use of these medications in the preschool child. The purpose of this study was to describe how caregivers' sociodemographic status, and attitudes and beliefs about their preschool child's health impacts their decision to medicate their child with OTC cough and cold medications. The constructs of the health belief model provided the theoretical basis for this study.

Research Questions

The following research questions were be addressed in this study:

1. What relationship do caregiver's attitudes about a child's susceptibility to illness, severity of illness, and trust in doctors have to the decisions to give OTC medications and/or call the doctor.
2. What relationship do caregiver's beliefs about the effectiveness of OTC medications and barriers to seeking care have to the decision to give OTC medications and/or call the doctor.
3. What relationship do caregiver's social factors have to the decision to give OTC medications and/or call the doctor.

CHAPTER 3

METHODOLOGY

Research Design

A descriptive correlational design was used for this study. Measures of attitudes, beliefs, and social factors influences on caregivers' decision-making in the use of OTC medication in preschool children were obtained from caregivers' of children in the HeadStart Program in southern Wisconsin. Approval for this study was granted by the University of Wisconsin - Madison Center for Health Sciences Human Subjects Committee prior to data collection (See Appendix A).

Participants

A convenience sample of caregivers with an index child between the ages of 3 and 5 years old was recruited. The sample was drawn from the Dane County and Jefferson County HeadStart Programs whose clients were willing to participate in the survey. Inclusion criteria for this study were (a) adult responsible for the index child at least eight hours a day, (b) adult responsible for the index child when sick during the daytime or nighttime, (c) willingness to participate in this study. Fifty six adult caretakers agreed to participate in the study. The participants were informed of the purpose of the study through a letter of consent and understanding (See Appendix B). They received the letter when they indicated interest in participating. The letter contained information as to who the principle investigator was and how to contact that person with questions or concerns. The intent of the study, understanding how caregivers

decide to use medicine they could buy at the store or get from the doctor, was explained. The caregivers were asked to complete two questionnaires. The first questionnaire asked questions about the caregiver's beliefs regarding a child's health (See Appendix C). The second questionnaire had questions to distinguish when a caregiver would decide to give OTC medications and when they would seek professional advice (See Appendix D).

The Letter of Understanding and Consent contained information about confidentiality and benefits of participation. The final paragraph of the letter asked for voluntary participation. Many caregivers asked questions about the amount of time it would take to complete the questionnaires, although this was also stated in the letter, what the information was going to be used for, and if the information would mean anything. Prior to giving out the questionnaires, the investigators attending the parent meetings, read and explained the letter and answered any questions about the study. Verbal consent was obtained prior to distributing the questionnaires and the caregivers participating received a copy of the letter of consent for future reference.

The pediatric nurse practitioner for the Dane County Parent Council, Inc., an umbrella agency for Human Services in Dane county, assisted in obtaining approval from HeadStart for the study to be conducted with their client population. The purpose of the study and informed consent procedure were discussed with the Director of Children's Services. The Director of Children's Services drafted a letter approving participation from the Dane County Parent Council, Inc. The primary investigator was given a list of HeadStart centers within Dane county. Contact was made through the educational coordinator for each center. The times of the monthly meetings were identified and

arrangements to have an investigator for this study to be present at the meetings were made. Eight centers participated in the study. At the Jefferson County HeadStart program a slightly different procedure was used to recruit participants, the purpose and consent was discussed with the educational coordinator. Verbal approval was received from the educational coordinator, four caregivers attended the monthly meeting and agreed to participate in the study from Jefferson County HeadStart.

Sample Characteristics

The final sample for this study consisted of fifty-two caregivers (N=52). Fifty-six participants completed the questionnaire but four were unusable due to less than half of the questionnaire completed. The caregiver's age ranged from nineteen to fifty two years (mean = 27.9, S.D.= 6.87). Twelve caregivers chose not to indicate their age or entered their child's age instead. Seventy-seven percent of the sample were high school graduates/GED or beyond (n=40). Caregivers indicated they were the caretaker if the child was sick in the daytime (94.2%). Caregivers also indicated they were caregivers if the child were sick at night (98.1%). Of those who responded, greater than half of the caregivers indicated they were employed either part-time, full-time, or full-time with a second job (69.3%). The remainder of the respondents indicated they were either "looking for work" or "not employed", and one respondent chose not to answer the question. Thirty-eight of the respondents (n=20) reported having no partner or their partner was not employed. The majority of the caregivers were white (n=40, 76.9%), with the remainder reporting nonwhite racial background, African-American (n=7), Latin American (n=3), and Biracial (n=2).

Data Collection Procedure

Initially the investigators attended a monthly HeadStart parent council meeting at several locations throughout Dane county and Jefferson county to explain the purpose of the study and recruit participants. Investigators were available at the HeadStart centers when council meetings began to explain the purpose of the study to the caregivers. Those interested in participating were given a letter explaining the purpose and informed consent was requested. The informed consent was verbally explained by the investigator. After all questions were answered the parents agreeing to participate were given the questionnaires with verbal instructions on how to complete them. Parents had a number of questions about what the information was going to be used for. Participants attending the council meetings were interested in the results of the study.

Most council meetings were held after work hours with exception of two which were held during HeadStart class time at one o'clock in the afternoon. Approximately two to ten caregivers were recruited from each meeting. A second recruitment trip to one of the HeadStart locations was necessary because only one caregiver attended the council meeting when recruitment was initiated. To obtain a better response from this center, the educational coordinator suggested questionnaires could be sent to the home of potential participants. When the child was picked up for HeadStart classes by the HeadStart bus driver the questionnaire would be given to the caregiver. When class was completed and the child was dropped off at home, the bus driver then collected the completed questionnaires from the participants that completed them.

Instruments

An informational questionnaire requesting the age of caregiver, child's position in family, gender of child, employment status and type of work of caregiver, and partner's employment status/type of work was included in the packet (See Appendix E). Twenty-four of the fifty-two participants did not report a partner's employment status or type of work. The socioeconomic status was determined based on the participant's educational level and the highest occupational rating in the household. The occupational factor was ranked using a nine-step scale (Hollingshead, 1965).

OTC Medication Questionnaire

The OTC Medication Questionnaire was developed to address the first research question concerning caregivers' attitudes and beliefs about child health, vulnerability, susceptibility to illness, severity of illness, trust in doctors, and efficacy of OTC cough and cold medications. This measure was based on indices used in previous research employing the Health Belief Model (HBM) (Bates, Fitzgerald, Wolinsky, 1994; Champion, 1984; Jette, Cummings, Brock, Phelps, & Naessens, 1981; Weissfeld, Brock, Kirscht, & Hawthorne, 1987). Jette et al. (1981) explored health belief measures and found discrete health beliefs exist. They looked at general measures of perceived susceptibility to illness, perceived severity to illness, trust in doctors, and perceptions of barriers to health actions. They explored the general and condition-specific concepts of perceived severity, susceptibility, barriers, and trust in doctors. Based on the results of their research they recommended questionnaire items that included general measures of belief as well as

condition-specific measures. The OTC Medication questionnaire utilized both types of measures.

Weissfeld et al. (1987) established reliabilities for Health Belief Model factor scales which were independent of age, sex, and race. Questions in the OTC Medication questionnaire were patterned after these HBM items. The Weissfeld study addressed the domains of the HBM that the OTC Medication Questionnaire explored such as susceptibility, severity, and perceived barriers.

Bates et al. (1994) established reliability and validity for an instrument designed to measure maternal health beliefs. Again, the domains investigated included susceptibility, severity, and barriers.

Champion V. L. (1984) also established validity and reliability for the instrument used in that study. Again, the HBM domains were explored although the participants in the Champion study were all women asked to address the issue of breast cancer. All of the previous studies utilized a Likert-type scale for the instruments.

Questions in the OTC Medication Questionnaire were designed to address the four domains of the Health Belief Model: severity, susceptibility, benefits, and barriers. The questionnaire also addressed trust in doctors and effectiveness of OTC medications. Participants were given a statement concerning a belief or attitude regarding their child and asked to indicate on a continuum if they agreed or disagreed with the statement based on a seven point Likert-type scale, with one being disagree and seven being agree. The individual items in the questionnaire were developed from the previous research instruments and adapted for the population in this survey. Jette et al. (1981), Weissfeld et al. (1987), and Bates et al. (1984) established content

validity for the items in their measurement tools. The OTC Medication Questionnaire was reviewed by student pediatric nurse practitioners and instructors to determine face and content validity.

Table 1

Reliability of OTC Medication (Health Belief Model) Questionnaire

<u>Subscale</u>	<u>n</u>	<u>Reliability Coefficient Alpha</u>
Severity	55	0.85
Susceptibility	53	0.58
Barriers	54	0.50
Trust in doctors	53	0.45
Effectiveness of OTC medication	52	0.44

The Cronbach's alpha was used to determine reliability of the subscales for this measure. Reliability Coefficients are reported in Table 1. Although subscales of locus of control, benefits, and motivation were included in the questionnaire, they had alpha's at or below .20, therefore were not used for further analysis in this study.

Data related to a child's severity of illness, susceptibility to illness, and the caregiver's trust in doctors were considered to represent attitudes. The first two questions of the OTC Medication Questionnaire measured perception of severity of illness. Caregivers were asked to rank on a scale of one to seven (one = disagree and seven = agree) their perceptions of the child's severity of a cold. Data revealed that for the questions, "Whenever my child gets a cold, it seems very serious" and "My child gets worse colds than other kids this age",

the majority of the respondents chose answers with a mean less than three ($X=2.67$) indicating they felt their child's colds were less severe ($n=39$, 75%).

Responses to the susceptibility index, which included questions, "My child gets sick more easily than other kids", "My child will probably catch a cold in the next year", and "I worry **a lot** about my child getting sick" indicated a more neutral response. In the analysis of the data the mean response was $X=4.2$ ($n=34$, 65.4%).

Trust in doctors included, "My doctor gives useful advice when my child is sick", "When my child gets sick, my doctor can help me more than a family member or friend", "Medicines I can buy at the store are better than the medicines the doctor gives me", and "My doctor gives me good advice about preventing colds". In the analysis of the data it was discovered that question twelve, "Medicines I can buy at the store..." was reversed. The correction was made and resulted in greater than half having trust in doctors ($n=34$, 65.4%).

The beliefs measure included two indexes: barriers to seeking care and perceived effectiveness of OTC medications from the OTC Medication Questionnaire.

"Giving medicine to my child scares me somewhat", "I have a hard time leaving work to get my child to the doctor", "I don't give medicine I can buy at the store to my child unless the doctor says it's ok", and "The medicine the doctor wants me to buy (prescription) is too expensive" were used in the barriers to seeking care index.

The frequency distribution of scores indicated the majority of subjects ($n=40$, 76.9%) perceived few if any barriers to seeking care. These participants answered had responded in the one through four range of the Likert scale ($X=$

3.19). No subject responded with a six or seven which would have indicated agreement with the barriers questions.

The perceived effectiveness of OTC medications index was measured through two questions, “ Medicines I can buy at the store are better than the medicine the doctor gives me” and “ I think the medicine I buy at the store, for my child’s cold, works well”. The frequency distribution of scores for this index showed that subjects were inclined to feel OTC medication were not very effective. More than half (n=41, 78.8%) answered the questions with a response less than five. Although a large number of subjects (n=30, 57.7%) chose a response between three and five, with four being unsure, indicating either they didn’t understand the questions or they were unsure how effective they felt OTC medication was. The mean rating for the perceived effectiveness of OTC medications index was $X=3.64$ (n=52).

Medicine Decisions Questionnaire

The second questionnaire addressed the decision-making process through a progression of illness scenario. An algorithm was developed through informal interviews held during well and ill child checks. There were two sites utilized for the interviews. One was an inner-city pediatrician’s office and the other was a small town public health department evaluating children for HealthCheck. All of the preschool children were accompanied by their mothers and were covered with private insurance or Medical Assistance. They were asked to indicate the decision-making process they use when considering a decision to give OTC cough and cold medications vs. seeking professional care.

Content and face validity was obtained when pediatric nurse practitioner (PNP) students reviewed and discussed the content of the tool. Statements regarding a child's symptomatology were listed in order of severity, duration, and combinations of symptoms. Caregivers were asked to rate their choice of treatment using a seven point Likert-type scale with a range of response choices from 1) no, 4) maybe, 7) yes. The five options offered were give OTC medication, call the doctor, do neither, wait & watch, and family cure.

The subscales for this measure were the five categories. The reliability was determined using the Cronbach's alpha method.

Table 2

Reliability of Medicine Decisions Questionnaire

<u>Subscale</u>	<u>n</u>	<u>Reliability Coefficient Alpha</u>
Give OTC medication	45	0.95
Call the doctor	46	0.85
Do neither one	41	0.90
Wait and watch	42	0.88
Family cure	40	0.98

The Medicine Decisions Questionnaire included, three open-ended questions. The questions were: a) "Please tell me what things make you want to call the doctor and no longer give medicines you can buy at the store?", b) "When you buy medicine at the store for your child, do you ask the

pharmacist for help?", and c) "Tell me anything else?". Caregivers answered these questions with a wide variety of responses.

The research questions were addressed using the Pearson's r (product-moment correlation coefficient) to determine relationships between the variables. The relationship of attitudes, beliefs, and social factors between giving OTC medication and calling the doctor were specifically explored.

Chapter 4

Results

The purpose of this study was to describe how caregivers' perception of severity, susceptibility, trust in doctors, perceived barriers to seeking care, and perceived effectiveness of OTC medication affect their decisions for care of preschool child's health, and how social factors impact their decision to medicate their child with OTC cough and cold medications and/or call the doctor. The constructs of the health belief model guided the theoretical basis for this study.

Attitudes

Research Question # 1

What relationship do caregiver's attitudes about a child's susceptibility to illness, severity of illness, and trust in doctors have to the decisions to give OTC medications and/or call the doctor?

Severity

There was a significant correlation ($r = .376$, $p < .01$) between severity of illness and calling the doctor. Subjects who felt their child's illness was severe were more likely to call the doctor for advice.

Susceptibility

There was a significant correlation ($r = .394$, $p < .01$) between a child's susceptibility to illness and calling the doctor. Subjects who felt their child was susceptible to illness were more likely to call the doctor.

Table 3**Pearson Product-Moment Correlation Coefficients of Attitudes, Beliefs, and Social Factors with Giving OTC medication and Calling the Doctor**

Attitudes, Beliefs, and Social Factors	Give OTC Meds	Call the Doctor
Age of caregiver	0.014	-0.373*
Gender of child	-0.031	0.238
SES indicator	0.355*	0.021
Severity	-0.012	0.376**
Susceptibility	0.028	0.394**
Barriers	-0.166	0.061
Trust in doctors	-0.263	-0.086
Efficacy of OTC meds	0.339*	0.159
Health locus of control	0.114	-0.246
Benefits	0.179	0.056
Motivation	0.116	-0.427**

* Correlation is significant at the
0.05 level (2-tailed)

** Correlation is significant at the
0.01 level (2-tailed)

Trust in Doctors

There was no significant correlation between trust in doctors and the decision to call the doctor or give OTC medication. Subjects tended not to base their decisions on whether they trusted or did not trust the doctor.

Beliefs

Research Question #2

What relationship do caregiver's beliefs about the effectiveness of OTC medications and barriers to seeking care have to the decision to give OTC medications and/or call the doctor?

There were no significant correlations between barriers and the decision to call the doctor or to give OTC medications. Barriers to seeking care made no impact in their decision to medicate and/or call the doctor.

There was a significant correlation ($r=.339$, $p<.05$) between the perceived effectiveness of OTC medications and giving OTC medication. Subjects who perceived OTC medications as effective were more likely to give OTC medications to their children.

Social Factors

Research Question #3

What relationship do caregiver's social factors have to the decision to give OTC medications and/or call the doctor?

The social factors explored were age of the caregiver (subject), gender of the child, and an SES indicator.

There were significant correlations with the social factors of age of parent and SES indicator in relationship to giving OTC medications and calling the

doctor. There was a significant negative correlation ($r = -.373$, $p < .05$) between age of parent and calling the doctor. Younger subjects were more likely to call the doctor than older subjects.

There was a significant correlation ($r = .355$, $p < .05$) between SES indicators and giving OTC medication. The subjects with a higher SES score were more likely to use OTC medications for their children.

There was no significant correlation between the gender of the child and giving OTC medications and/or calling the doctor. The gender of the child does not seem to play a role in the decision making process.

Open Ended Questions

Three open ended questions were asked at the end of the Medicine Decisions Questionnaire. Forty seven subjects responded to one or more of the questions.

Question #1: Please tell me what things make you want to call the doctor and no longer just give medicines you can buy at the store?

Forty three subjects responded to this question. Subjects' responses indicated fever or persistent illness/cold was the greatest reason to seek professional advice. Other responses included (a) after using OTC medication for 2 days without results, (b) an illness out of the ordinary, (c) asthma episode or illness with difficulty breathing, (d) diarrhea and vomiting with fever, (e) yellow/green phlegm or nasal drainage, (f) flu, sore throat, or dehydration. Caregivers clearly had a standard of related symptoms and conditions that concerned them enough to seek professional advice.

Thirty four subjects reported fever as the primary reason to seek the advice of a doctor. Subjects listed perceptible signs of illness through their descriptions of conditions that concerned them. For example, fever, lethargy, cough, vomiting, and decreased appetite. Eleven subjects indicated they wanted to use medication prescribed by the doctor only. Sixteen subjects described loss of appetite, decreased fluid intake, or vomiting/diarrhea as a time for professional advice. Nine subjects listed breathing problems or asthma as a reason to seek professional care. Others mentioned lethargy, strep throat, unusual behavior, prolonged irritability, and ear infection. Two subjects indicated they were unsure what factors would necessitate calling the doctor.

Question # 2: When you buy medicine for your child at the store, do you ask the pharmacist for help?

Forty two subjects responded to this question. Twenty subjects indicated they did ask the pharmacist for assistance in selecting medications for their children. Twelve subjects said they did not consult with the pharmacist. Ten caregivers chose to call the doctor for assistance or asked the pharmacist what they would recommend that “wouldn’t interfere with the medications prescribed by the doctor” or “to cure the problem faster”. Responses to this question indicate the majority of subjects would seek advice of the pharmacist in selecting medications.

Question #3: Tell me anything else?

Fifteen subjects chose to respond to this question. Three caregivers indicated they tried not to use OTC medication because they didn’t believe the medication worked, and would use herbal tea or children’s non-aspirin to treat/prevent colds. One of these subjects reported OTC’s weren’t natural and worried about antibiotic and OTC resistance. Two caregivers responded with

“my doctor tells me which medicine to use”, while two others indicated generic works as well as prescription just read the ingredients and match medicine, increase fluids--hot teas, chicken soup, rest and TLC.

Summary

Significant correlations were found between severity, susceptibility, and age of the caregiver with calling the doctor. Perceived effectiveness of OTC medications and the SES indicator (education and occupation factor) significantly correlated with giving OTC medications. In the qualitative questions at the end subjects identified specific ideas that lead them from giving OTC medications to calling the doctor.

Chapter 5

Discussion

The purpose of this study was to describe how caregivers' perception of severity, susceptibility, trust in doctors, perceived barriers to seeking care, and perceived effectiveness of OTC medication affect their decisions for care of preschool child's health, and how social factors impact their decision to medicate their child with OTC cough and cold medications and/or call the doctor.

Self report measures from caregivers with preschool age children regarding their attitudes toward a child's susceptibility to illness, severity of illness, trust in doctors, and effectiveness of OTC medication were obtained. The variables were examined in relationship to the decision to give OTC medications and/or call the doctor. Significant correlations exist between the severity of a child's illness and the susceptibility of a child illness and calling the doctor. There was a significant correlation between perceived effectiveness of OTC medication and the likelihood to give OTC medication. Other significant correlations were the younger age of the parent and the likelihood of calling the doctor as well as a higher SES score indicated a greater likelihood to use OTC medications.

The first research question addressed the relationship between caregiver's attitudes about a child's susceptibility to illness, severity of illness, and trust in doctors and the decisions to give OTC medications and/or call the doctor. In regards to severity perception it was found that a significant correlation existed between the perceived severity of a child's illness and calling the doctor. The

caregivers who indicated their child gets serious colds and/or the cold their child gets is worse than others the same age were more likely to have scored higher on severity measures which related to calling the doctor. The caregivers with attitudes of increased severity were likely to seek professional guidance. It is understandable that if a caregiver feels their child is at greater risk the less likely they are to medicate with OTC medications without verifying that it is safe. The mean ($X=2.67$) response on the severity measure indicated, overall, the majority of the sample didn't feel that their children had illnesses of greater severity than other children.

Examining the Medicine Decisions questionnaire, the severity of the illness appeared to have a small effect on giving OTC medication but fever and persistence of symptoms had a greater effect on calling the doctor. This was supported by the responses to the open ended questions. Fever and persistence of symptoms was reported most often to be the influencing factor when caregivers were asked when they would most likely call the doctor and not give OTC medication alone. Caregivers also noted that if the OTC medication appeared ineffective or the illness was out of the ordinary they would seek professional advice. Maiman et al., 1982 and Maiman et al., 1986 found that the perception of severe illness increased the likelihood of use of OTC medications for the child. The Maiman et al. studies did not explore the issue of an alternative to medications such as calling the doctor. In response to the open ended questions caregivers did identify that they would seek professional advice if the current OTC medication was used for two days or more with no improvement. Some of the caregivers had attempted to treat their child before feeling it necessary to obtain professional care. This would suggest that some caregivers do attempt to treat their child's illness themselves before calling the

doctor. If the child has an illness the caregiver feels is severe and they are unable to handle safely, they seek professional care.

There was a significant relationship between the perception of a child's susceptibility to illness and calling the doctor. If the caregiver felt the child was more susceptible to illness than other children they were more likely to call the doctor than use OTC medication. The items on the OTC Medication Questionnaire that addressed susceptibility asked caregivers if their child gets sick more easily than others, the likelihood of their child catching a cold in the next 12 months, and if they worry a lot about their child getting sick. The mean response ($X = 4.24$) indicated the majority of caregivers neither agreed nor disagreed with the context of susceptibility.

When examining this finding in relation to the Medicine Decisions data, it was found that parents who felt their child was susceptible to illness were more likely to call the doctor and less likely to use OTC medications. Maiman et al. (1982) found that mothers who felt their children were highly susceptible to illness kept a greater amount of OTC medication on hand and tended to trust their own opinion of their child's health before that of the doctor. Maiman et al. (1982) also found that these mothers were frequently adding OTC medication to a course of therapy prescribed by a doctor.

The Maiman study did not explore consulting a doctor as opposed to or in addition to OTC medications. The present study's findings did indicate that as symptoms progressed a greater likelihood of calling the doctor existed. Hutton et al. (1991) reported that, although there was no difference between a medication and a placebo in reported effectiveness, parents felt children needed medication for colds. The difference between the caregiver seeking a doctor to obtain medication or advice and giving OTC medications on their own was not

addressed. This study suggests that when given a set scenario of progressive illness, caregivers will, when they have concern regarding progress and response of the illness, make a decision to call the doctor. From previous studies it would appear that caregivers feel that medication is necessary and gave it to their children. Although this study did not address medications kept on hand, in previous research has. In some cases caregivers with a larger supply of medication on hand trusted their assessment of the child's health more than the doctor's. In this study when asked about giving OTC medication versus calling the doctor, many caregivers indicated they would call the doctor. Comparing the perception of increased susceptibility and the concept of seeking professional advice makes sense, intuitively. Caregivers who feel their child has a higher likelihood of getting ill and when they are sick the illness is more severe would want to seek professional advice.

It was interesting that trust in doctors was not found to have a significant relationship to either giving OTC medications or calling the doctor. Seeking professional advice from a doctor would indicate some form of trust on the part of the caregiver. It would be understandable, as in previous research, that a caregiver who was more likely to give OTC medications would demonstrate less trust in professional care. The results of this study indicated that trust had little bearing on either giving OTC medication or seeking professional care. This may indicate that caregivers felt their children needed care at the professional level and not necessarily did they trust that it was better, just that the responsibility was no longer on them if they went to the doctor.

The second research question addressed the relationship between caregiver's beliefs about the effectiveness of OTC medications and barriers to seeking care and the decision to give OTC medications and/or call the doctor?

In regards to barriers to seeking care it was found that there were no significant perceived barriers to seeking care. Barriers did not affect the decision to give OTC medications or to call the doctor. The mean response ($X=3.19$) would indicate that the majority of the caregivers were unsure or didn't believe barriers to seeking care existed. The fact that no caregiver strongly agreed barriers existed would lead one to assume that barriers did not prevent them from calling the doctor.

The study sample was drawn from participants in a HeadStart program where financial need must be demonstrated for participation. In this case, the cost of OTC medication could conceivably have made an impact on barriers. The need for caregivers not to lose time from work to bring the child to the doctor was another consideration. The caregivers in this sample did not indicate that issues of time off work and cost of medications were barriers to seeking care.

A significant relationship was found between perceived effectiveness of OTC medications and giving OTC medication. It can be concluded that if caregivers felt OTC medication worked then they more were likely to use the medications. When the responses to the open-ended questions were analyzed a small number of caregivers indicated they didn't believe OTC medications worked or would call the doctor for advice as to which ones to use.

Hutton et al. (1991) found that parents' assessment of need for medication was directly related to reported effectiveness of OTC medications in children with cough and cold symptoms. More improvement was reported for the children whose parents requested medication compared to those whose parents did not. Although in the analysis of the data, there was no difference between placebo and OTC medication. It is apparent, if caregivers believe that

OTC medication help the child they will tend to use them. These findings together with the present study's findings support the fact that perceived effectiveness of medication could result in OTC medication usage.

Smith and Feldman (1993) concluded, from a review of efficacy studies of OTC cold medications, that the medications may be effective in adults but that no evidence existed that supported the use in children. The investigators went on to suggest that the effectiveness of OTC medication did not justify the cost. In addition, the potential problems for the age group was significant. Gadowski and Rubin (1993) reported that the perception of susceptibility to illness and the belief that OTC medications were effective were important parental determinants of OTC cold medication usage in children. This finding supports the present study in that caregivers who feel the medications are effective will use them.

The third research question addressed the relationship between caregiver's social factors and the decision to give OTC medications and/or call the doctor?

In regards to the age of the caregiver, a significant negative correlation existed between the age of the caregiver and calling the doctor. The younger caregivers were more likely to call the doctor than older caregivers. Several conclusions can be drawn from this finding. The older caregiver may be more experienced in childcare, therefore tend to take care of illnesses on their own not wanting to "bother" the doctor. The younger caregiver may regard the healthcare system as a right and call the doctor more frequently with questions and concerns. The child's position in the family was addressed and forty-eight percent of caregivers reported that the index child was the first child. The likelihood in calling the doctor may have been directly related to inexperience in the

caregiver. It would have been interesting to explore the relationship between the age of the child, the age of the caregiver, and the likelihood of calling the doctor.

A significant correlation existed between SES indicators and giving OTC medication. Caregivers with a higher SES score were more likely to give OTC medications. This seems reasonable in that caregivers with more available financial resources could afford more OTC medications. Maiman et al. (1986) concluded that mothers with a higher SES level possessed and used a greater number of OTC medication for their children. Kogan et al. (1994) also concluded that mothers with higher SES scores and education were more likely to give their children OTC medication while they were ill.

There were no significant correlations between gender of the child and giving OTC medications or calling the doctor. Whether the child was a boy or girl made no difference overall in the results.

Limitations and Recommendations for Future Study

This study had several limitations. The sample size was small and homogeneous. In order to obtain results that can generalized a larger sample size should be obtained. The sample was selected due to convenience and accessibility of the group. The SES scores were lower overall because this group is not representative of the general population. To have children in HeadStart financial limitations must be demonstrated. The data obtained may be characteristic of this population but not generalizable to caregivers of all preschool children. If samples from various sites with different economic bases could be obtained possibly information relating to social factors could be more generalizable.

The reliabilities of the subscales in the OTC Medication Questionnaire were low. The individual items were worded differently than the examples from the indices that guided the questions. In the development of the tool for this study sample, the wording was below a sixth grade reading level based on suggestions from individuals working with this group. Following the wording used in previous research may have increased the reliability of the subscales in this instrument. A greater number of questions in each of the subscales may have also increased the reliability.

The Medicine Decisions Questionnaire had some limitations as well. It was designed to be a progression in symptoms to differentiate when a caregiver ceases to treat with OTC medications and seeks professional care. Again the wording of the items may have confused the subjects when attempting to answer the items. The questions were below the sixth grade reading level and in the rewording of the question the intent may have been confused. The first question appeared not to fit the subsequent progression, which was reflected by the means not following the expected pattern. The first question explored a cough that scared the caregiver while the rest of the questions were a minor cough progressing to a significant illness. The results actually revealed that subjects wanted to access professional care in addition to giving OTC medications.

The Likert-type scale of one to seven with no being one and yes being seven may not have been appropriate. The data obtained from this study were not interval data. The interval scale represents distances between numerical values as equal distances in the characteristic being measured. In other words, the "maybe" option as a midpoint on the scale was not representative of the decision-making process. The decisions caregivers made were not on a

continuum of indecision but more likely dichotomous. A scoring revision of three values; no, unsure, and yes may more accurately reflect the desire to give OTC medication or seeking professional care.

This study served to pilot test the instruments and evaluate their effectiveness in obtaining the information desired. With the suggested changes and refinements the tools could be effective and useful.

Implications

The findings indicate the need for greater anticipatory guidance for families. When perceived severity and susceptibility were high for a caregiver the likelihood of calling the doctor was significant. The findings also indicate if caregivers believed OTC medications worked they were likely to use them more often. Earlier studies of efficacy found that in preschool age children, cough and cold OTC medications were ineffective.

As advocates for children, it is essential that practitioners provide anticipatory guidance to families about illnesses and the progression, the efficacy and safety of OTC medications, and use of the healthcare system. Understanding how caregivers come to make decisions regarding medications in their young children will aid health professionals in anticipatory guidance, education, and counseling caregivers.

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APPENDIX A

**APPROVAL FOR STUDY
UNIVERSITY OF WISCONSIN-MADISON
CENTER FOR HEALTH SCIENCES
HUMAN SUBJECTS COMMITTEE**

APPENDIX B**LETTER OF UNDERSTANDING
AND CONSENT**

Letter of Understanding and Consent

Dear Parent/Caregiver,

My name is Connie Ecklund, and I am a graduate nursing student at the University of Wisconsin-Madison. I am doing a study of how parents/caregivers make decisions when their children have colds. I am trying to understand how parents/ caregivers decide how to use the medicines they can buy at the store or get from the doctor.

You will be asked to complete two questionnaires, plus provide general information about you and your family. Your participation in this study is entirely voluntary. Your answers to the questions will be confidential. Your answers will not be identified by name. One questionnaire will ask about how you decide to use medicines you can buy at the store in order to help your child's cold, cough, fever, or runny nose. The second questionnaire asks what you believe about your child's colds and illnesses. It will take about 15-20 minutes of your time to answer the questionnaires. I can help you fill out the questionnaire and answer questions you may have.

Although there is no direct benefit to you from this study, we hope to learn how to help parents, in the future, make decisions for their children's medicines. This information will help health professionals talk to parents about the care of minor illnesses in their children.

You can decide whether or not to participate in this study. If you decide to participate, please take the time to complete the questionnaires and return them to me. If you have any questions, feel free to ask them now, or you can call me at the telephone number provided below.

Sincerely,

Connie R. Ecklund, RNc
Graduate Student
School of Nursing
University of Wisconsin-Madison
414-478-3903

Patricia A. Lasky, RN, PhD
Faculty Advisor

APPENDIX C

OTC MEDICATION QUESTIONNAIRE ITEMS

OTC Medication (Health Belief Model) Questionnaire Items

Please circle if you agree or disagree with the questions. You can indicate a number between 1 and 7 if you don't completely agree or completely disagree.

Disagree

Agree

Whenever my child gets a cold, it seems very serious.	1	2	3	4	5	6	7
My child gets worse colds than other kids this age.	1	2	3	4	5	6	7
My child gets sick more easily than other kids.	1	2	3	4	5	6	7
My child will probably catch a cold in the next year.	1	2	3	4	5	6	7
I worry a lot about my child getting sick.	1	2	3	4	5	6	7
Giving medicine to my child scares me somewhat.	1	2	3	4	5	6	7
My doctor gives useful advice when my child gets sick.	1	2	3	4	5	6	7
When my child gets sick, the doctor can help me more than a family member or a friend.	1	2	3	4	5	6	7
I usually take care of my child's cold at home and don't go see the doctor.	1	2	3	4	5	6	7
I have a hard time leaving work to get my child to the doctor.	1	2	3	4	5	6	7
It is important that children get their baby shots.	1	2	3	4	5	6	7
Medicines I can buy at the store are better than the medicines the doctor gives me.	1	2	3	4	5	6	7
I think the medicine I buy at the store, for my child's cold, works well.	1	2	3	4	5	6	7

Form # _____

	Disagree				Agree		
I don't give medicine I can buy at the store to my child unless the doctor says it's ok.	1	2	3	4	5	6	7
I think the medicine I get from the doctor (prescription) helps my child's cold.	1	2	3	4	5	6	7
The medicine that the doctor wants me to buy (prescription) is too expensive.	1	2	3	4	5	6	7
My doctor gives me good advice about preventing colds.	1	2	3	4	5	6	7
I know how to do certain things which stops my child from getting sick.	1	2	3	4	5	6	7
My child will get colds no matter what I do.	1	2	3	4	5	6	7

In this last question, we would like to find out how worried you are about some illnesses kids get. Tell us, using the numbers 1 - 5 (with 1 being the least worried and 5 being the most worried) how worried you are when your child has:

	least		most		
cough	1	2	3	4	5
cough & runny nose	1	2	3	4	5
cough, runny nose, & fever	1	2	3	4	5

APPENDIX D

MEDICINE DECISIONS

Medicine Decisions

I am looking at how parents decide when to get help for a sick child. Knowing how parents make those choices helps us be more useful to parents. So I am going to ask you to imagine that your preschool-age child has a cold. Please rate the statements according to how likely it would be for you to decide to either:

1) go to the drug store for over-the-counter medicine or 2) call the doctor's office. Over-the-counter medicine is medicine you can buy without a prescription like Tylenol, Robitussin, or similar products.

Please rate the probability that you would use each choice:

Situation	I would:	NO		maybe			YES	
My child has a cough that scares me.	Give OTC medicine	1	2	3	4	5	6	7
	Call the doctor	1	2	3	4	5	6	7
	Do neither one	1	2	3	4	5	6	7
	Wait and watch	1	2	3	4	5	6	7
	Family Cure	1	2	3	4	5	6	7
My child has a cough that sometimes wakes me up at night.	Give OTC medicine	1	2	3	4	5	6	7
	Call the doctor	1	2	3	4	5	6	7
	Do neither one	1	2	3	4	5	6	7
	Wait and watch	1	2	3	4	5	6	7
	Family Cure	1	2	3	4	5	6	7
My child has a cough that wakes me up 3 or more times at night.	Give OTC medicine	1	2	3	4	5	6	7
	Call the doctor	1	2	3	4	5	6	7
	Do neither one	1	2	3	4	5	6	7
	Wait and watch	1	2	3	4	5	6	7
	Family Cure	1	2	3	4	5	6	7
My child has a cough that wakes me up 3 or more times a night for 3 days.	Give OTC medicine	1	2	3	4	5	6	7
	Call the doctor	1	2	3	4	5	6	7
	Do neither one	1	2	3	4	5	6	7
	Wait and watch	1	2	3	4	5	6	7
	Family Cure	1	2	3	4	5	6	7
My child has a cough that wakes me up 3 or more times a night for 1 week.	Give OTC medicine	1	2	3	4	5	6	7
	Call the doctor	1	2	3	4	5	6	7
	Do neither one	1	2	3	4	5	6	7
	Wait and watch	1	2	3	4	5	6	7
	Family Cure	1	2	3	4	5	6	7

Situation	I would:	NO							maybe	Yes						
My child has a cough & a runny nose.	Give OTC medicine	1	2	3	4	5	6	7								
	Call the doctor	1	2	3	4	5	6	7								
	Neither one	1	2	3	4	5	6	7								
	Wait and watch	1	2	3	4	5	6	7								
	Family Cure	1	2	3	4	5	6	7								
My child has a cough & a runny nose for 3 days.	Give OTC medicine	1	2	3	4	5	6	7								
	Call the doctor	1	2	3	4	5	6	7								
	Neither one	1	2	3	4	5	6	7								
	Wait and watch	1	2	3	4	5	6	7								
	Family Cure	1	2	3	4	5	6	7								
My child has a cough & a runny nose for 1 week.	Give OTC medicine	1	2	3	4	5	6	7								
	Call the doctor	1	2	3	4	5	6	7								
	Neither one	1	2	3	4	5	6	7								
	Wait and watch	1	2	3	4	5	6	7								
	Family Cure	1	2	3	4	5	6	7								
My child has a cough, runny nose, and fever (T=104).	Give OTC medicine	1	2	3	4	5	6	7								
	Call the doctor	1	2	3	4	5	6	7								
	Neither one	1	2	3	4	5	6	7								
	Wait and watch	1	2	3	4	5	6	7								
	Family Cure	1	2	3	4	5	6	7								
My child has a cough, runny nose, and fever for 3 days.	Give OTC medicine	1	2	3	4	5	6	7								
	Call the doctor	1	2	3	4	5	6	7								
	Neither one	1	2	3	4	5	6	7								
	Wait and watch	1	2	3	4	5	6	7								
	Family Cure	1	2	3	4	5	6	7								
My child has a cough, runny nose, and a fever for 1 week.	Give OTC medicine	1	2	3	4	5	6	7								
	Call the doctor	1	2	3	4	5	6	7								
	Neither one	1	2	3	4	5	6	7								
	Wait and watch	1	2	3	4	5	6	7								
	Family Cure	1	2	3	4	5	6	7								

Form # _____

Situation	I would:	NO							maybe	Yes						
My child has a cold and/or fever, the preschool/daycare says not to send my child with a cold or fever.	Give OTC medicine	1	2	3	4	5	6	7								
	Call the doctor	1	2	3	4	5	6	7								
	Neither one	1	2	3	4	5	6	7								
	Wait and watch	1	2	3	4	5	6	7								
	Family Cure	1	2	3	4	5	6	7								

Please tell me what things make you want to call the doctor and no longer just give medicines you can buy at the store?

When you buy medicine for your child at the store, do you ask the pharmacist for help?

Tell me anything else?

APPENDIX E

FAMILY INFORMATION

Family Information**Please complete the following questions:**

1. Are you the person who cares for this child **more than 8 hours a day**? Yes No
2. Is this your 1st child _____ 2nd or 3rd child _____ 4th or more _____
3. If this child were sick, are you the person who would take care of him/her in the **daytime**? Yes No
4. If this child were sick at **night**, are you the person who would take care of him/her? Yes No
5. **Gender of child:** Male _____ Female _____ 6. **Your Age** (in years): _____
7. **Education:** Which of the following have you completed? (check highest level)

Elementary/Jr. High (highest grade) _____ High School Diploma _____

GED _____ Trade/Business School Certificate/Diploma _____

Technical/ Associate Degree _____ College/University: College courses _____

Degree: Bachelors _____ Graduate _____

Other (list) _____
8. **Your Type of Work:** _____
9. **Right Now You Are** (check one):

Looking Work Work Full-time Not
for work part-time Full-time & second job employed
10. **Your Spouse's/Partner's Work:** _____
11. **Your Spouse's/Partner's Employment Status** (check one):

Looking Work Work Full-time Not
for work part-time full-time & second job employed
12. **Your Race:** (optional) (you can check more than one)

Asian _____ Black _____ White _____ Latin American _____

American Indian _____ Biracial _____ Other _____
13. **Please circle the number of times the child has had the problem in the last year.**

Breathing problems	0	1-3	more than 4	Fever	0	1-3	more than 4
Colds	0	1-3	more than 4	Diarrhea	0	1-3	more than 4
Vomiting	0	1-3	more than 4	Ear infections	0	1-3	more than 4